

CLAIMS:

1. Apparatus suitable for clearing an obstruction from a cutting instrument during a surgical procedure, the apparatus comprising:

means for interrupting configured to interrupt aspiration flow in tubing coupled to the cutting instrument; and

means for flushing configured to flush fluid in the tubing, situated distal to the means for interrupting, in a distal direction,

whereby flushing the fluid in a distal direction facilitates removal of the obstruction.

2. The apparatus of claim 1 further comprising an actuation means having an exterior surface, the exterior surface enclosing the means for interrupting and the means for flushing.

3. The apparatus of claim 2 wherein the exterior surface is bulb-shaped.

4. The apparatus of claim 2 wherein the means for interrupting comprises at least one inward protrusion configured to apply compression to a section of the tubing.

5. The apparatus of claim 4 wherein the means for flushing comprises at least one fluid chamber disposed within the exterior surface and distal to the means for interrupting.

6. The apparatus of claim 5 wherein the fluid chamber comprises air, wherein compression of the fluid chamber is configured to cause compression of the tubing.

7. The apparatus of claim 5 wherein the fluid chamber comprises a liquid, wherein compression of the fluid chamber is configured to cause compression of the tubing.

8. The apparatus of claim 2 wherein the means for flushing comprises an interior compression member configured to selectively compress a section of the tubing distal to the means for interrupting.

9. The apparatus of claim 2 wherein the means for interrupting comprises at least one roller disposed within the exterior surface of the actuation means, wherein the roller is configured to selectively apply compression to a section of the tubing.

10. The apparatus of claim 9 wherein the means for interrupting further comprises at least one spring having proximal and distal ends, wherein the roller is coupled to the distal end of the spring.

11. The apparatus of claim 10 wherein the proximal end of the spring is fixedly attached to a proximal region of the actuation means.

12. The apparatus of claim 9 further comprising at least one roller guide disposed within the exterior surface and configured to guide movement of the roller.

13. The apparatus of claim 1 wherein the means for flushing comprises at least one roller configured to be advanced in a distal direction with respect to the tubing.

14. The apparatus of claim 1 wherein the means for interrupting comprises first and second rollers coupled to first and second handles, respectively, wherein actuation of the first and second handles causes the first and second rollers to selectively apply compression to a section of the tubing.

15. The apparatus of claim 14 wherein the first and second rollers also are the means for flushing.

16. The apparatus of claim 14 further comprising a first channel disposed in the first handle and a second channel disposed in the second handle, wherein the first and second channels are configured to guide movement of the first and second rollers, respectively.

17. The apparatus of claim 1 wherein the means for interrupting comprises at least one roller coupled to a roller axle, wherein the roller axle is configured for movement within a channel of a housing, and wherein the roller is configured to selectively apply compression to a section of the tubing.

18. The apparatus of claim 17 wherein the roller also is the means for flushing.

19. The apparatus of claim 18 wherein the channel comprises an advancement channel and a return channel.

20. Apparatus suitable for clearing an obstruction from a cutting instrument during a surgical procedure, the apparatus comprising:

an actuation means having an exterior surface configured to surroundingly engage a section of tubing coupled to the cutting instrument; and

at least one inward protrusion disposed within the exterior surface, the inward protrusion configured to selectively compress an outer portion of the tubing,

whereby compression of the actuation means is configured to cause the inward protrusion to compress the tubing to interrupt aspiration flow in the tubing, and whereby further compression of the actuation means is configured to cause fluid in the tubing to be flushed in a distal direction to facilitate removal of the obstruction.

21. The apparatus of claim 20 further comprising at least one fluid chamber disposed distal to the inward protrusion, wherein compression of the actuation means is configured to cause fluid in the fluid chamber to apply a compressive force upon the tubing.

22. The apparatus of claim 20 further comprising at least one interior compression member disposed distal to the inward protrusion and configured to selectively apply a compressive force upon the tubing.

23. Apparatus suitable for clearing an obstruction from a cutting instrument during a surgical procedure, the apparatus comprising:

an actuation means having an exterior surface configured to surroundingly engage a section of tubing coupled to the cutting instrument;

at least one spring having proximal and distal ends disposed within the exterior surface of the actuation means; and

at least one roller coupled to the distal end of the spring and configured to selectively engage an outer portion of the tubing,

whereby actuation of the actuation means is configured to cause the roller to compress the tubing to interrupt flow in the tubing, and further configured to flush fluid in the tubing in a distal direction to facilitate removal of the obstruction.

24. The apparatus of claim 23 wherein the proximal end of the spring is fixedly attached to a proximal region of the actuation means.

25. The apparatus of claim 23 further comprising at least one roller guide disposed within the exterior surface and configured to guide movement of the roller.

26. The apparatus of claim 25 wherein the roller guide has a proximal region, a distal region, and a slant disposed therebetween.

27. The apparatus of claim 26 wherein the proximal region of the roller guide is configured to house the roller so that the roller does not impose a substantial force upon the tubing.

28. The apparatus of claim 27 wherein the spring is configured to return the roller to the proximal region of the roller guide when no substantial external forces are applied to the actuation means.

29. The apparatus of claim 28 wherein the distal region of the roller guide is configured to cause the roller to apply a compressive force upon the tubing when the roller is advanced within the distal region.

30. Apparatus suitable for clearing an obstruction from a cutting instrument during a surgical procedure, the apparatus comprising:

a housing having at least one channel disposed therein, the housing configured to receive a section of tubing coupled to the cutting instrument; and

at least one roller coupled to a roller axle, the roller axle configured for movement within the channel,

wherein the roller is configured to be actuated to selectively compress an outer portion of the tubing to interrupt aspiration flow in the tubing, and further configured to flush fluid in the tubing in a distal direction to facilitate removal of the obstruction.

31. The apparatus of claim 30 wherein the housing has a lower surface, wherein a section of the tubing is configured to be disposed atop the lower surface.

32. The apparatus of claim 30 wherein the channel has a proximal region and a distal region separated by a central region having a contoured shape.

33. The apparatus of claim 32 wherein the proximal region of the channel is configured to house the roller axle in a fully aspirating state, so that the

roller does not impose a substantial force upon the tubing.

34. The apparatus of claim 33 wherein the distal region of the channel is configured to cause the roller to apply a compressive force upon the tubing when the roller is advanced within the distal region.

35. The apparatus of claim 30 wherein the channel comprises an advancement channel and a return channel separated by a partition.

36. The apparatus of claim 35 wherein the advancement channel is configured to cause the roller to apply a compressive force upon the tubing when the roller is advanced within the advancement channel.

37. Apparatus suitable for clearing an obstruction from a cutting instrument during a surgical procedure, the apparatus comprising:

a handle configured for use with the cutting instrument;

means for interrupting disposed within the handle; and

means for flushing disposed within the handle at a location distal to the means for interrupting,

wherein the means for interrupting is configured to interrupt aspiration flow within the handle, and the means for flushing is configured to flush fluid, distal to the means for interrupting, in a distal direction to facilitate removal of the obstruction.

38. The apparatus of claim 37 further comprising electrical supply means coupled to the means for interrupting and the means for flushing.

39. The apparatus of claim 37 further comprising at least one section of aspiration tubing disposed within the handle.

40. The apparatus of claim 39 wherein the means for interrupting is disposed adjacent to a section of the aspiration tubing.

41. The apparatus of claim 39 wherein the means for interrupting fully encircles a section of the aspiration tubing.

42. The apparatus of claim 39 further comprising an irrigation supply line having proximal and distal ends, wherein the distal end of the irrigation supply line is coupled to the means for flushing.

43. The apparatus of claim 42 wherein the means for flushing comprises a one-way valve configured to selectively permit fluid communication between the irrigation supply line and the aspiration tubing.

44. The apparatus of claim 39 wherein a plurality of tubing sections are provided, and wherein at least one section of tubing is more flexible with respect to the other sections of tubing.

45. The apparatus of claim 39 further comprising an actuation means configured to actuate the means for interrupting and the means for flushing.

46. The apparatus of claim 45 wherein the actuation means is configured to electronically actuate the means for interrupting and means for flushing in a sequential manner using a predetermined routine.

47. The apparatus of claim 45 wherein the actuation means is configured to mechanically actuate the means for interrupting and means for flushing in a sequential manner.

48. A method for clearing an obstruction from a cutting instrument during a surgical procedure, the method comprising:

interrupting aspiration flow in tubing coupled to the cutting instrument; and
flushing fluid in the tubing in a distal direction,

whereby flushing fluid in a distal direction facilitates removal of the obstruction.

49. The method of claim 48 wherein interrupting aspiration flow comprises actuating a roller to apply a compressive force upon the tubing.

50. The method of claim 48 wherein actuating the roller comprises compressing an exterior surface of an actuation means, the actuation means having the roller disposed therein.

51. The method of claim 50 wherein flushing fluid in the tubing in a distal direction comprises applying further compression to the exterior surface of the actuation means to advance the roller in a distal direction.

52. The method of claim 48 wherein interrupting aspiration flow comprises compressing an actuation means to cause an inward protrusion, disposed within the actuation means, to apply a compressive force upon a first section of the tubing.

53. The method of claim 52 wherein flushing fluid in the tubing in a distal direction comprises applying further compression to the actuation means to compress a second section of the tubing, the second section disposed distal to the first section of the tubing.